

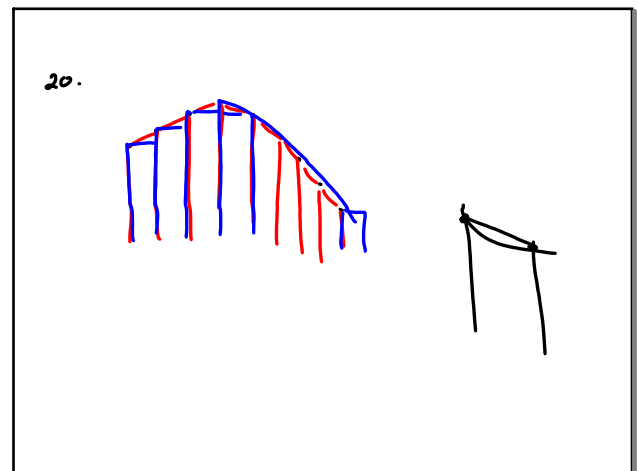
27. $y = \sin x$
 $y' = \cos x$
 $\int_0^\pi \sin x \, dx = 2$

$|E_T| = \frac{b-a}{12} \left(\frac{b-a}{n} \right)^2 \frac{1}{24}$

$\frac{b-a}{10^2}$	Trap(10)	1.98	error .02
$\frac{b-a}{(10^3)^2}$	Trap(100)	1.9998	.0002
$\frac{b-a}{10^6}$	Trap(1000)	1.999998	.000002

add factor of 10, error decreased by 2 decimal places

Nov 10-8:32 AM



Nov 10-9:16 AM

ch 5 big ideas

net area = $\int_a^b f(x) \, dx$ (exact)

Riemann Sums

all these approximate net area

need even spacing

Trapezoids

if not evenly spaced: do one trapezoid at a time

LRAM $[y_0 + y_1 + \dots + y_{n-1}] \Delta x$

RRAM $[y_1 + y_2 + \dots + y_n] \Delta x$

MPAM $[y_1 + y_3 + y_5 \dots] 2\Delta x$

Trapezoids

$\frac{h}{2} [y_0 + 2y_1 + 2y_2 + \dots + 2y_{n-1} + y_n]$

$\frac{1}{2}(b_1 + b_2)h$

Nov 10-9:20 AM

$\int_a^b f(x) \, dx$ (number)

$F(x) = \int_a^x f(t) \, dt$ (accumulation function)

FTC $F'(x) = f(x)$

I $\frac{d}{dx} \int_a^x f(t) \, dt = f(x)$

II $\int_a^b f(x) \, dx = F(b) - F(a)$

$F(x)$ is an antider. of $f(x)$

Nov 10-9:33 AM

MVT for Integrals

c exists between a & b

$$f(c)(b-a) = \int_a^b f(x) dx$$

Average Value of a function

$$\bar{y} = \frac{1}{b-a} \int_a^b f(x) dx$$

Nov 10-9:39 AM